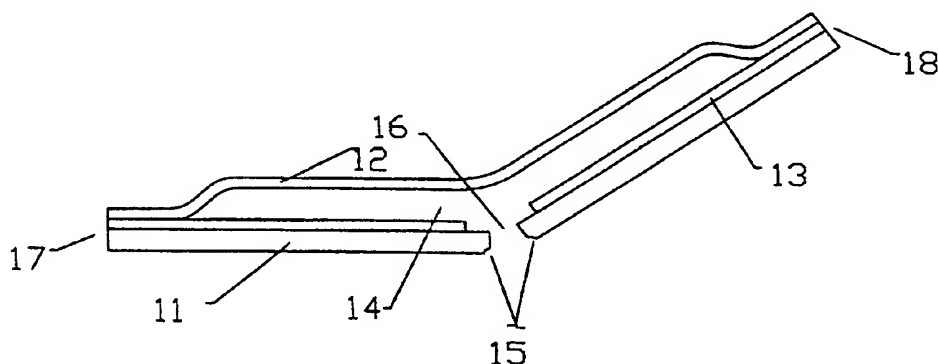




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/NZ96/00078 (22) International Filing Date: 26 July 1996 (26.07.96) (30) Priority Data: 272718 4 August 1995 (04.08.95) NZ (71) Applicant (for all designated States except US): SNAP PAK PACKAGING SYSTEMS LIMITED [NZ/NZ]; 44 Gasson Street, Sydenham, Christchurch (NZ). (72) Inventor; and (75) Inventor/Applicant (for US only): COCKBURN, Harry, George [NZ/NZ]; 44 Gasson Street, Sydenham, Christchurch (NZ). (74) Agents: LYTH, Richard, John et al.; Baldwin Son & Carey, 342 Lambton Quay, Wellington 6001 (NZ).		(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: BREAKABLE SACHET**(57) Abstract**

A breakable sachet and method of manufacturing same is described. The sachet is formed from layers (11, 12, 13) of plastics film sealed so as to form a reservoir (19). The sachet further incorporates a semi-rigid layer (11) which is scored or weakened (15) so that when the semi-rigid layer is bent, it fractures along the score (15) and the contents of the reservoir can be expelled via a hole (16), formed proximate the fracture point, in controlled manner. A method of manufacturing the sachets includes forming a vertical reservoir which includes a semi-rigid layer (33), the reservoir is partitioned by means of a hot roller (34, 35) and the webs (31, 32, 33) forming the reservoir and sealed to the semi-rigid layer (33) include a hole (16) formed therein. The semi-rigid layer (33) includes a score or weak point (15).

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Breakable Sachet

Technical Field

The present invention relates to sachets. More particularly, although not exclusively, the present invention relates a sachet for storing and dispensing quantities of liquid, paste, powder or similar substances in discrete predetermined quantities. The present invention further relates to an apparatus and method for producing said sachets.

The general area of application of the present invention is in the production and distribution of food condiments. However, other applications such as dispensing medicines, glues, cosmetics and the like are envisaged.

Background To The Invention

Sachets known in the art include flexible sachets wherein the contents are expelled by, for example, tearing off a corner or end of the sachet and exerting pressure on the exterior of the sachet.

Other prior art devices include rigid moulded "tray" or "blister" type sachets wherein the condiment or similar substance is sealed in by means of an aluminium foil or plastic lid. The lid is heat-sealed or otherwise secured to the upper edges of the tray. In this case the contents are extracted by peeling back the foil lid and either exerting pressure on the lid and the plastic tray or by using an implement such as a knife or spoon to extract the contents.

These constructions suffer disadvantages in that they can be expensive to manufacture, messy to use and, when extracting the contents of the sachet,

behave unpredictably in terms of the flow of the substance through, for example, the aperture formed by tearing off the corner of the sachet. In the case of the tear-back foil lid the mobility and ease of extraction of the contents may vary depending on the viscosity of the contents.

There have been attempts to overcome these disadvantages in the prior art, however they have met with mixed success. One solution includes dividing the rigid tray into two sections and providing a perforated "beak" in a more substantial plastic or foil lid. The beak is located between the two tray sections wherein the tray sections in the beak are arranged so that when the ends of the condiment tray are bent towards each other in such a manner as to crush one section against another, the beak cracks along the aforesaid perforation and the contents may be expelled through the cracked beak by squeezing. This construction suffers from disadvantages in that the perforations sometimes crack in transit, and the contents of the tray sections can spoil or be otherwise contaminated. They are also more complicated structurally and therefore more expensive to manufacture.

It is an object of the present invention to provide a sachet and a means and method for producing the same, which overcomes or at least mitigates the above mentioned disadvantages, or at least provides the public with a useful choice.

Disclosure Of The Invention

According to one aspect of the invention there is provided a sachet formed from a plurality of plastics layers sandwiched together to form a reservoir wherein at least one of said layers is a semi-rigid plastics layer adapted so that upon bending

said semi-rigid plastics layer will fracture, said semi-rigid plastics layer is located so as to form an outside layer of said plastics layers.

The sachet can be formed from two plastics layers and one semi-rigid layer wherein the plastics layer adjacent the semi-rigid layer incorporates an aperture located proximate said fracture.

Alternatively, the sachet can be formed from one plastics layer and one semi-rigid layer wherein the reservoir is formed therebetween.

The sachet can be elongate, oval or similar suitable shape.

The semi-rigid plastics layer can incorporate a scored line or a region of weakness to effect the fracture.

The reservoir can contain a liquid, paste, powder or similar substance.

The reservoir can, with suitable adaptation contain a powder, granules or similar dry substance.

In an alternative embodiment, the semi-rigid plastics layer may be smaller than the reservoir formed from the first and second flexible plastics layers, the geometry of the plastics layers being adapted so that the reservoir forms a flexible bag and the semi-rigid layer forms an opening means.

In use, the sachet is adapted so that when it is bent the semi-rigid layer fractures and upon further bending and subsequent compression of the reservoir contents,

the liquid, paste or similar substance is forced through the aperture and out of the sachet.

According to another aspect of the invention there is provided a sachet formed from a plurality of layers sandwiched together to form a reservoir wherein a centre layer is semipermeable so that removal of a sealing layer allows a fluid in the reservoir to permeate to atmosphere.

The layers can be two plastics layers and the sealing layer sandwiched together with the reservoir formed between the plastics layers, the centre layer being semipermeable.

The sealing layer can be formed from a plastic or other material which is removable.

The liquid in the reservoir can be scented, an air freshener or slow release insect repellent or killer.

In a further aspect the present invention provides for a method of manufacturing sachets comprising continuously sandwiching together a plurality of plastics layers so that a continuous reservoir is formed therebetween; said continuous reservoir is filled with a liquid, paste or similar substance to be contained therein; and the continuous reservoir is subdivided into the discrete segments wherein each segment corresponds to a sachet reservoir.

In a preferred embodiment the method comprises: sandwiching two plastics layers and one semi-rigid layer together in such a way as to form a continuous elongate reservoir wherein the plastics layer adjacent the semi-rigid layer has an aperture

formed therein prior to forming said continuous reservoir; the reservoir is filled with a liquid, paste or similar substance and the reservoir is fed continuously through a hot roller, the hot roller being adapted to seal the continuous reservoir substantially perpendicular to the elongate direction of said continuous reservoir and in such a manner as to form discrete reservoirs corresponding to each sachet reservoir.

Preferably a dumb-bell shaped hot roller is used to form the continuous elongate reservoir.

Preferably the hot roller which seals the reservoir into discrete reservoirs is cog shaped in cross-section, the cog teeth forming the sealing surface.

Preferably, the sealing step can be repeated.

Preferably the semi-rigid layer and the adjacent layer are pre-laminated prior to the addition of any further layers.

A fracture line or score can be formed in the semi-rigid layer during manufacture or be preformed in the semi-rigid layer.

Preferably, the fracture line or score has dimensions such that the semi-rigid layer fractures in a region proximate the hole in the plastics layer.

Preferably the continuous reservoir is oriented substantially vertically and filled using delivery means having an outlet located in the continuous reservoir formed between the two plastics layers.

The plurality of plastics layers can be sealed by heat, heat activated glue or similar means.

Further objects and advantages will become apparent in the following description which will be by way of example only and with reference to the accompanying drawings.

Brief Description Of The Drawings

- Figure 1 illustrates a perspective view of a sachet;
- Figure 2 shows a section through the sachet along line A-A;
- Figure 3 illustrates the sachet through the section A-A when the contents are being extracted;
- Figure 4 illustrates an exploded view of section A-A; and
- Figure 5 illustrates a schematic of an apparatus for manufacturing the sachets.

In the example shown in Figures 1 to 4 the sachet is made up of three plastics layers 11, 12 and 13. Layer 11 corresponds to the semi-rigid plastics layer and layers 12 and 13 correspond to the flexible plastics layers which between them form the reservoir which contains the liquid, paste, or similar substance indicated in outline by 19.

For clarity, the thickness of the layers have been exaggerated in Figures 1 to 4. In practice the layers 12 and 13 will be plastics films and the semi-rigid layer 11 will be approximately 0.5mm thick.

It is to be understood that variations in these thicknesses are within the scope of one skilled in the art and the present example is not to be construed restrictively.

Referring to Figure 2, the semi-rigid plastics layer 11 incorporates a transverse "score" 15. This is to provide a predictable fracture line so that when the ends 17 and 18 of the sachet are drawn together the reservoir 14 may be compressed between the two halves. The transverse score 15 acts as a weak point and the semi-rigid plastic layer 11 will fracture cleanly along that line, thereby providing a fracture region. The orientation of the fracture line is not restricted to transverse and other configurations are envisaged such as diagonal or offset from the centre. The fracture need not form a straight edge. Depending on the particular application, a curved, diagonal or serrated edge may be suitable. Also, while the transverse score is shown extending completely across the sachet, it may stop short of the edges and therefore provide a weak point primarily in the region near the hole. This avoids the possibility of sharp edge being produced at the edge of the broken semi-rigid layer pieces.

Referring again to the embodiment including the centre layer, when the ends 17 and 18 are drawn together (upwards in Figures 2 and 3), the reservoir 14 is compressed and the liquid or paste 19 contained therein is forced out of the hole 16 and onto the article desired (food etc.).

The hole 16 is located in layer 13 proximate the transverse score 15. In this particular example, the aperture is an oval hole 16. Alternatively, the hole could

be in the form of a slit or other shape, and aligned with the transverse score. Such variations are considered within the scope of the present invention.

The configuration of the particular example described herein is particularly advantageous in that upon drawing the ends 17 and 18 together the score is fractured and the substance contained within the reservoir 14 may be then extruded or forced through the hole 16 in a controlled manner. Further the edge formed by the transverse score 15 may be used to spread the substance or distribute it onto the article as desired. It is considered that this provides more control over where or how the substance in reservoir 14 may be spread or deposited than the prior art devices and further does not require the use of a separate spreading implement.

An alternative embodiment may omit the centre plastics layer 13 incorporating the hole 16. This construction is most suitable for cases where the aperture formed by the fracture is located and sized so as to provide the desired degree of control for expulsion of the material. Where the rigid layer fractures completely in two, the middle layer defines the exit aperture for the packaged material.

While the present example has been described with reference to an elongate sachet, it is envisaged that other shapes are possible such as oval, circular or the like. Also, while the particular example has been described with reference to a condiment or liquid substance for use with foodstuffs, the present invention could equally be used in the application of medical substances such as antiseptics, burn treatments and the like. In this application, the present invention could additionally have an absorbent layer located proximate the exit aperture and extend over the exposed surface of layer 11 as desired. The absorbent layer could

further be covered by a sterile protective strip which may be torn off to expose the absorbent layer.

Further, the sachet could be constructed so that the reservoir is significantly larger than the semi-rigid layer. In this alternative embodiment, the rigid layer and fracture would act more as an opening means for a larger reservoir. It is envisaged that volumes of 1 to 2 litres could be accommodated by such a construction and the breakable part of the sachet be located conveniently on the wall of the reservoir so that upon bending the fracture is formed and the enclosed substance extracted by squeezing the reservoir.

Further, the reservoir shape need not be limited to elongate or oval. The reservoir may be formed so as to be in a distinctive shape such as a well known bottle outline or similar recognisable outline.

Referring to Figure 5 an apparatus for the manufacture of the sachets is shown. One novel aspect of the process resides in the method of forming each of the sachet reservoirs. The particular example shown is for the manufacture of sachets including a single semi-rigid layer and two flexible plastics layers as described above wherein the two flexible plastics layers form the reservoir for containing the substance. The layers are fed from continuous rolls 21, 26 and 25. The middle layer 31 has an aperture formed therein by means of a device 24. Such a device may operate by melting, punching or a similar technique known in the art. The spacing and location of the holes is calculated based on the sachet dimensions and the location of the fracture point or "score" in the semi-rigid layer. The fracture point may be preformed in the semi-rigid layer or formed during the manufacture process. As discussed above, the score may be smaller than the width of the sachet, thus providing a different fracture characteristic.

The layers 31 and 33 could alternatively be pre-laminated and then fed into the roller system at roller 35 where the sachet contents is injected.

Layers 31 and 33 are continuously fed to heated rollers 22 and 23 wherein they are thermally bonded together. Layer 32 is continuously fed to heated rollers 34 and 35 where layer 32 is thermally bonded to a continuous portion of the surface of layer 31. Heated roller 34 is shaped so that upon continuous movement of the layers through the rollers only the edges of the layer 32 are bonded to the aforementioned layers so that a lengthwise continuous reservoir is formed from below the heated rollers 34 and 35. In cross section, roller 35 is "dumbbell" shaped with the edges locating adjacent roller 35 sealing the layers together at their edges. The heat sealing step may be repeated to ensure effective closure. It is possible that in the initial heating step, the 'squeezing' of the contents away from the sealing zone may conduct heat away thus producing an imperfect seal. The subsequent sealing step is intended to address this potential difficulty.

A delivery tube 28 is located in such a manner so that it extends between rollers 34 and 35 through the space formed by the shape of the roller 34. The delivery tube 28 extends downwards substantially into the continuous reservoir. Fluid, for example, is continuously supplied to the delivery system 28 so as to fill the continuous reservoir up to a constant level. This has the added advantage of excluding air from the reservoir to reduce the possibility of reaction or deterioration of the fluid contained therein. The fluid filled continuous reservoir then travels through heated rollers 29 and 27 wherein heated elements 30 compress the layer 32 against roller 27 thereby forcing the liquid out of the contact region 37 and thermally bonding the layer 32 to the layer 31 (which is already bonded to semi-rigid layer 33).

A variation of the present sachet includes a further sealing step whereby a strip of layer 12 and 13 is bonded together along the line of the fracture line. Such a bonded strip would divide the reservoir into two components with communication possible via the hole 16. Such a configuration may allow improved control when the contents is squeezed out of the reservoirs.

In a further embodiment, the substance to be contained in the reservoir may be simply dropped onto the top surface of layer 32. This technique is suitable for particularly viscous substances.

It is to be appreciated that the present description describes a single vertical continuous reservoir arrangement. However for different layer widths, roller 34 may be shaped so as to form a plurality of continuous reservoirs running vertically parallel through the roller system. In this case a number of delivery tubes 28 will be required. This alternative embodiment is considered within the scope of the invention. A further variation uses a divider wheel which separates the reservoir into two vertically oriented reservoirs.

The web of sachets produced may be subsequently fed into a cutting machine or transported in a roll for further processing.

The substance fed through delivery system 28 may be liquid or paste or similar, and may be fed under pressure or by gravity feed. The feed rate may be regulated so as to maintain a constant head of liquid in the continuous reservoir region above the heated rollers 29 and 27 so as to exclude air from the sachet reservoir.

A further advantage of the present invention is that layers 31, 32 or 33 may have preprinted material on them with the semi-rigid layer providing a particularly useful surface on which to place identify, decorative or similar graphical material. The manufacturing system shown in Figure 5 may also include perforating rollers (not shown) which provide perforations between the sachet elements 10. In this configuration webs of sachets may be delivered in a roll and broken off by hand as required.

While the present apparatus and sachet has been described in the context of plastics films and layers, it is envisaged that under certain circumstances paper layers or combinations of paper and plastics may be used, depending on the substance to be contained within the sachet and/or the tolerance of the substance to the bonding temperature. Such variations are considered within the scope of the present invention.

The apparatus shown in Figure 5 may be further adapted to include different numbers of layers depending on the construction of the sachet required and the nature of the substance to be contained therein. Further, there may be more than one separate reservoir in each sachet unit. Such variations may include a plurality of holes associated with a specific reservoir. This would allow for mixing of, for example, two substances such as glues comprising a bonding agent and activator.

Thus by the invention there is provided a convenient sachet for use in dispensing, for example, foodstuffs in the form of liquid, paste or similar. The sachet may be also used for dispensing medical substances wherein the apparatus in Figure 5 operates in a sterile environment.

In use the sachets are convenient and clean. Trial and experimentation have found that the sachets are resistant to puncturing and cracking along the transverse score 15 as well as to pressure exerted on the reservoir.

The sachets may be manufactured in convenient sizes, the dimensions and shape of which allow for easy storage, transport and display (in retail situations). The sachets are also particularly suitable for distribution from a dispensing device.

The apparatus of Figure 5 may also be readily modified whereby the height of the heated elements 30 and the depth of the heated roller 34 (shown by dotted line 36) may be varied to allow for a range of reservoir volumes.

Although the invention has been described by way of example and with reference to particular embodiments it is to be understood that modifications and/or improvements may be made without departing from the scope of the appended claims.

Where in the foregoing description reference has been made to integers or elements having known equivalents, then such equivalents are herein included as if individually set forth.

CLAIMS

1. A sachet formed from a plurality of plastics layers sandwiched together to form a reservoir wherein at least one of said layers is a semi-rigid plastics layer adapted so that upon bending said semi-rigid plastics layer will fracture, said semi-rigid plastics layer is located so as to form an outside layer of said plastics layers.
2. A sachet formed from a semi-rigid plastics layer and a plastics layer sandwiched together to form a reservoir wherein the semi-rigid plastics layer is adapted so that upon bending said semi-rigid plastics layer will fracture in a predetermined manner.
3. A sachet as claimed in claim 1 wherein the sachet is formed from two plastics layers and one semi-rigid layer wherein the plastics layer adjacent the semi-rigid layer incorporates an aperture located proximate said fracture.
4. A sachet as claimed in any preceding claim wherein the sachet is elongate, oval or similar suitable shape.
5. A sachet as claimed in any preceding claim wherein the semi-rigid plastics layer incorporates a score or a region of weakness adapted to effect the fracture.
6. A sachet as claimed in any preceding claim wherein the reservoir contains a liquid, paste, powder or similar substance.

7. A sachet as claimed in any preceding claim wherein the reservoir is adapted to contain a powder, granules or similar dry substance.

8. A sachet as claimed in claim 1 or 2 wherein the semi-rigid layer is smaller than the reservoir formed from the first and second flexible plastics layer, the geometry of the plastics layer is adapted so that the reservoir forms a flexible bag and the semi-rigid layer constitutes an opening means.

9. A method of expelling the contents of a sachet wherein the sachet, as claimed in any previous claim, is adapted so that when it is bent the semi-rigid layer fractures and upon further bending and subsequent compression of the reservoir contents, the liquid, paste or similar substance is forced through the aperture and out of the sachet.

10. A sachet formed from a plurality of layers sandwiched together to form a reservoir wherein a centre layer is semipermeable so that removal of a sealing layer allows a fluid in the reservoir to permeate to atmosphere.

11. A sachet as claimed in claim 10 wherein the layers correspond to two plastics layers and the sealing layer sandwiched together with the reservoir formed between the plastic layers, the centre layer being semipermeable.

12. A sachet as claimed in either claim 10 or 11 wherein the sealing layer is formed from a plastic or other material which is removable.

13. A sachet as claimed in either claim 11 or claim 12 wherein the liquid in the reservoir can be scented, an air freshener or slow release insect repellent or killer.

14. A method of manufacturing sachets including sandwiching two plastics layers and one semi-rigid layer together in such a way as to form a continuous elongate reservoir wherein the plastics layer adjacent the semi-rigid layer has an aperture formed therein prior to forming said continuous reservoir; the reservoir is filled with a liquid, paste or similar substance and the filled reservoir fed continuously through a hot roller, the hot roller being adapted to seal the continuous reservoir substantially perpendicular to the elongate direction of said continuous reservoir and in such a manner as to form discrete reservoirs corresponding to each sachet reservoir.

15. A method of manufacturing a sachet as claimed in claim 14 wherein the semi-rigid layer and the adjacent layer are pre-laminated prior to the addition of any further layers.

16. A method of manufacturing a sachet as claimed in any one of claims 14 to 15 wherein fracture line or score can be formed in the semi-rigid layer during manufacture or be preformed in the semi-rigid layer.

17. A method of manufacturing a sachet as claimed in either of claims 14 to 16 wherein the continuous reservoir is oriented substantially vertically and filled using delivery means having an outlet located in the continuous reservoir formed between the two plastics layers.

18. A method of manufacturing a sachet as claimed in any one of claims 14 to 17 wherein the plurality of plastics layers is sealed by heat, heat activated glue or similar means.

19. A sachet substantially as herein described with reference to figures 1 to 4.

20. A method of manufacturing a sachet substantially as herein described with reference to figure 5.

1/3

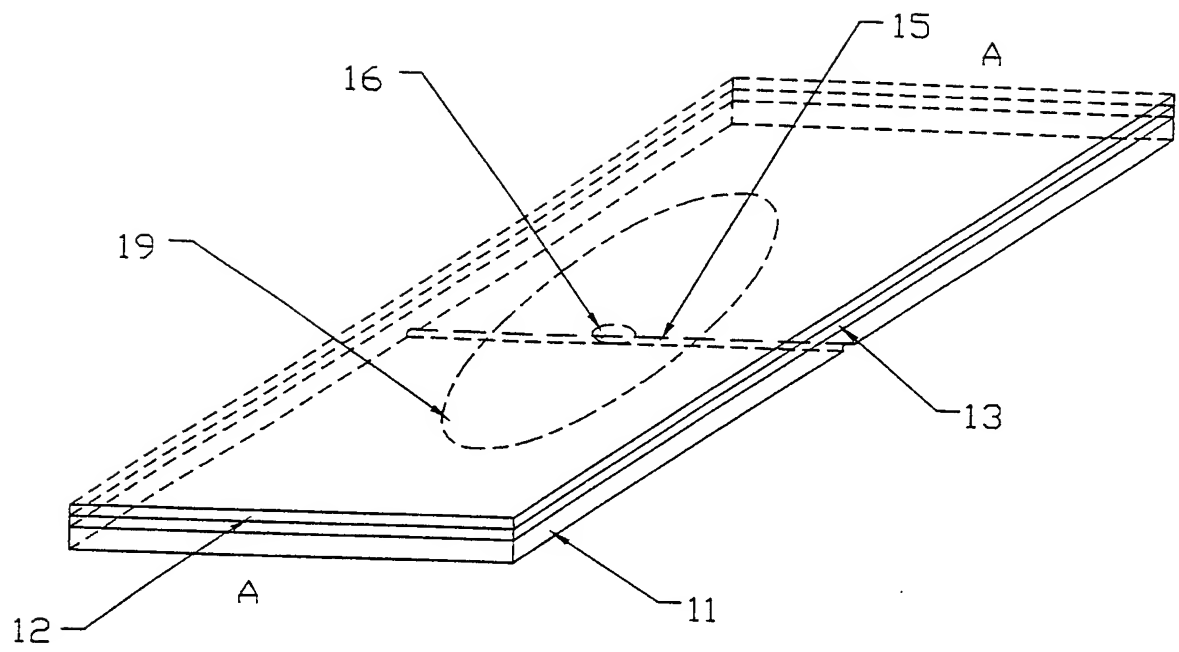


Fig 1

2/3

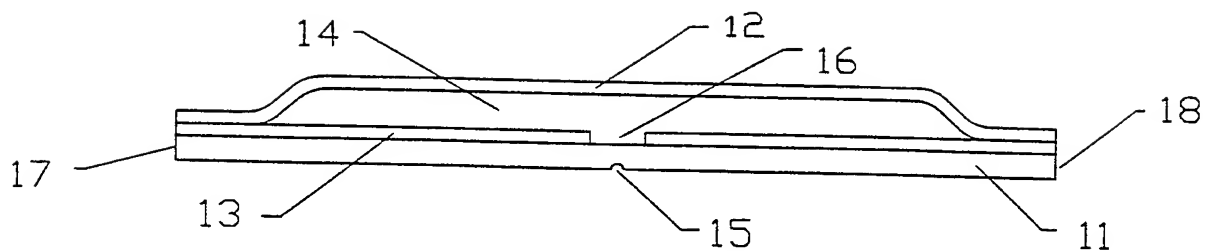


Fig 2

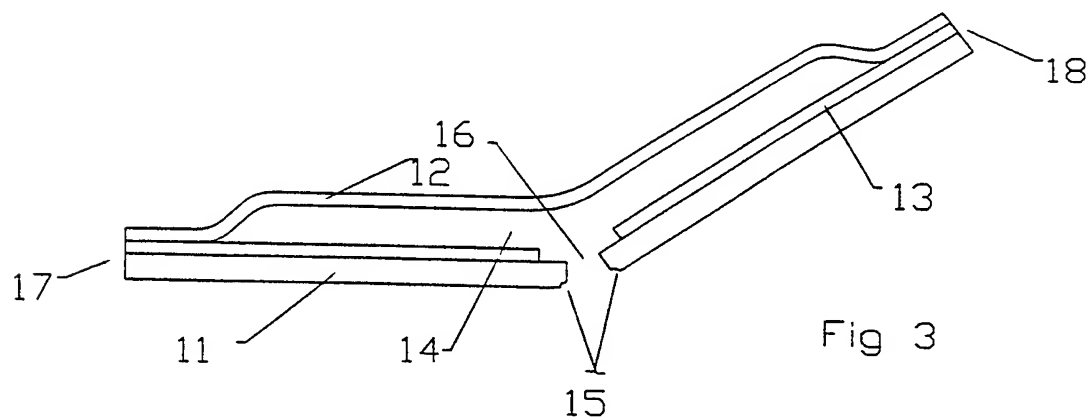


Fig 3

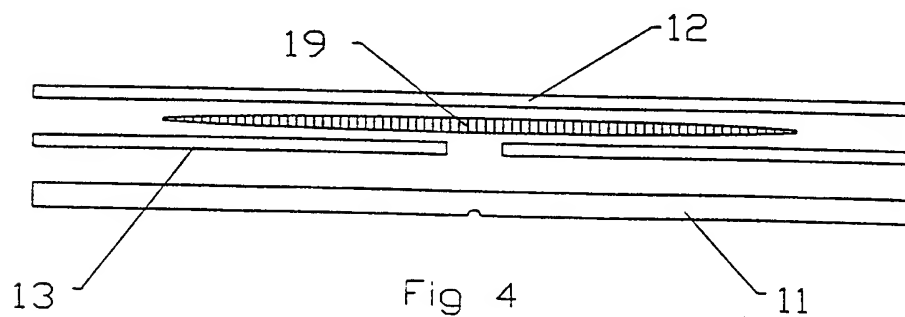


Fig 4

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/NZ 96/00078

A. CLASSIFICATION OF SUBJECT MATTER		
Int Cl ⁶ : B65D 75/40, 48, 36, 58-62		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) IPC B65D 75/40-75/62, 75/36; A47G 19/18, 30, 32, 34 Pais only		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU: IPC as above, USPM: 206/484, 107, 484.2, 469, 634		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DERWENT: sachet or pack or pouch or bag Fractur: or frangibl: or weak or scor: or perforat: semi(w)permeabl: or semi(w)pervious:		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 94/27555 A (THE PROCTER & GAMBLE CO) 8 December 1994 page 9, line 30-page 11, line 6, figures 13-16	1-9 14-18
Y	US 4236652 A (BEGUHN) 2 December 1980 page 2, line 55-page 3, line 21, figures 1-5	1-9 14-18
X	AU 72071/74 B (482452) (SANFORD R) 12 February 1976 whole document	1-9
Y		
X		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 11 October 1996		Date of mailing of the international search report 24 Oct 1996
Name and mailing address of the ISA/AU AUSTRALIAN INDUSTRIAL PROPERTY ORGANISATION PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (06) 285 3929		Authorized officer JAGDISH WABLE Telephone No.: (06) 283 2638

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/NZ 96/00078

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	AU 19159/83 A (SANFORD R) 24 May 1984 whole document	1-9
X	AU 47827/85 A (SANFORD R) 24 April 1986 whole document	1-9
X	AU 21286/83 A (METAL BOX PLC) 26 April 1984 whole document	1,2,4-9
X	US 3905479 A (GERNER et al.) 16 September 1975 whole document	1,2,4-9
X	GB 1572603 A (MARDON FLEXIBLE PACKAGING LTD) 30 July 1980 whole document	10-13
X	AU 49661/79 (531497) B (HYMAN) 13 November 1980 whole document	10-13
X Y	EP 81791 A (HENKEL KGAA) 22 June 1983 abstract, figures 1-3 figure 6	10-13 14-18
X	EP 95335 A (UNILEVER NV) 30 November 1983 page 20 line 10-page 21, line 24, figures 5, 6	10-13
A	AU 16340/88 A (FREYBERG DETIA GmbH) 1 December 1988 figures 1-11	10-13
A	US 4130245 A (BRYSON) 19 December 1978 figures 1-3	10-13
X	US 3453661 A (REPKO) 1 July 1969 page 5, line 15-page 6, line 26, figure 12	14-18
Y	GB 1152552 A (SCHWEIZERISCHE INDUSTRIE-GESELLSCHAFT) 21 May 1969 figures 1-4	14-18
Y	US 4557377 A (MALONEY) 10 December 1985 figures 8-9	14-18

INTERNATIONAL SEARCH REPORT

Application No.
NZ 96/00078

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5373966 A (O'REILLY et al.) 20 December 1996 figure 19	14-18
A	US 2530400 A (RADO) 21 November 1950 figure 7	14

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/NZ 96/00078

Box 1 Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 19, 20
because they relate to subject matter not required to be searched by this Authority, namely: they refer to the description and drawings in respect of the technical features of the invention - see Rule 6.2(a)
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see extra sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/ NZ 96/00078

Supplemental Box

(To be used when the space in any of Boxes I to VIII is not sufficient)

Continuation of Box No: II

- 1 Claims 1-8 are directed to a sachet formed by sandwiching a plurality of plastics layers to form a reservoir where at least one of the layers is a semi-rigid plastics layer. Claim 9 is directed to a method of opening such a sachet containing a semi-rigid layer. Claims 14-18 are directed to a method of manufacturing sachet having two plastics layers and one semi-rigid layer forming a reservoir. It is considered that the sachet having at least one layer of semi-rigid material comprises a first "special technical feature".
- 2 Claims 10-13 are directed to a sachet formed from a plurality of layers where a centre layer is semi-permeable so that when a sealing layer is removed, fluid in the sachet is permeated to atmosphere. It is considered that the semi-permeable layer which allows the fluid to permeate to atmosphere comprises a second "special technical feature".

Since the abovementioned groups of claims do not share either of the technical features identified, a "technical relationship" between the inventions, as defined in PCT Rule 13.2 does not exist. Accordingly the international application does not relate to one invention or to a single inventive concept.

The subject matter common to these claims a sachet having a reservoir formed by two layers which is not novel in the light of cited documents of the report. Hence there is lack of unity a posteriori.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.
PCT/NZ 96/00078

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
AU	72071/74	AT	6718/74	BE	818690	CA	1018085
		CH	585654	DE	2439511	DK	4421/74
		FI	2452/74	FR	2241467	GB	1463094
		IL	45412	IT	1019057	JP	51026197
		LU	70754	NL	7410903	NO	742977
		PH	11938	ZA	7404854	US	3986640
WO	94/27555	AU	69522/94	BR	9406631	CN	1124918
		CZ	9503135	FI	955705	HU	73341
		NO	954706	PL	311722	WO	9427555
US	4236652						
AU	19159/83	BG	43184	BR	8306275	CA	1201684
		DD	214105	DK	5075/83	EP	109737
		FI	833541	GR	79009	HK	73/89
		HU	36416	IL	69738	JP	59103866
		JP	1182268	MX	156733	NO	833615
		NZ	205599	PH	20162	PL	244582
		PT	77640	US	4493574	YU	2102/83
		ZA	8306787	EP	104866	WO	8401121
		AU	20336/83	DK	2351/84	NO	842027
AU	47827/85	BR	8505096	CA	1239116	CN	85107387
		CS	8507361	DK	4650/85	EP	178918
END OF ANNEX							

INTERNATIONAL SEARCH REPORT

PCT/NZ 96/0078

Patent Document Cited in Search Report			Patent Family Member			
		ES 289630	FI 853798	GR 852479		
		HU 41688	IL 76259	IN 167033		
		JP 61104973	NO 853840	NZ 213298		
		PH 22212	PT 81313	SG 782/94		
		US 4611715	YU 1475/85			
AU 21286/83	BR 8307565	DK 2910/84	EP 121549			
	FI 842324	GB 2138403	NO 842337			
	US 4567986	WO 8401556				
US 3905479	US 3912082					
GB 1572603						
AU 49661/79	US 4285468	CA 1133853	EP 19010			
	EP 93262	US 4161283				
EP 81791	DE 3149508					
EP 95335	AU 14621/83	BR 8302625	CA 1205423			
	DK 2246/83	FI 831696	GB 2122657			
	GR 78296	JP 58209397	NO 831776			
	NZ 204224	PT 76725	US 4567675			
	ZA 8303619					
AU 16340/88	BR 8802477	DD 281537	EP 292948			
	EP 510732	IL 86373	IN 170021			
	JP 1056537	PT 87582	US 4932155			
	YU 966/88	ZA 8803702				
US 4130245	AU K40274/78	DE 2841669	FR 2404575			
	GB 2005141	JP 54070416	NZ 188534			
	US 4130245					
END OF ANNEX						

INTERNATIONAL SEARCH REPORT

PCT/NZ 96/00078

Patent Document Cited in Search Report				Patent Family Member			
US	3453661						
GB	1152552	DE	1629151	US	3391047		
US	4557377	AU	20211/83	CA	1209102	EP	106648
		GB	2128576	JP	59142944	US	4631905
		US	4540089	AU	82025/82	EP	74362
		GB	2096570	WO	8203208		
US	5373966	AU	79772/91	EP	531429	WO	9118804
US	2530400	NONE					
END OF ANNEX							